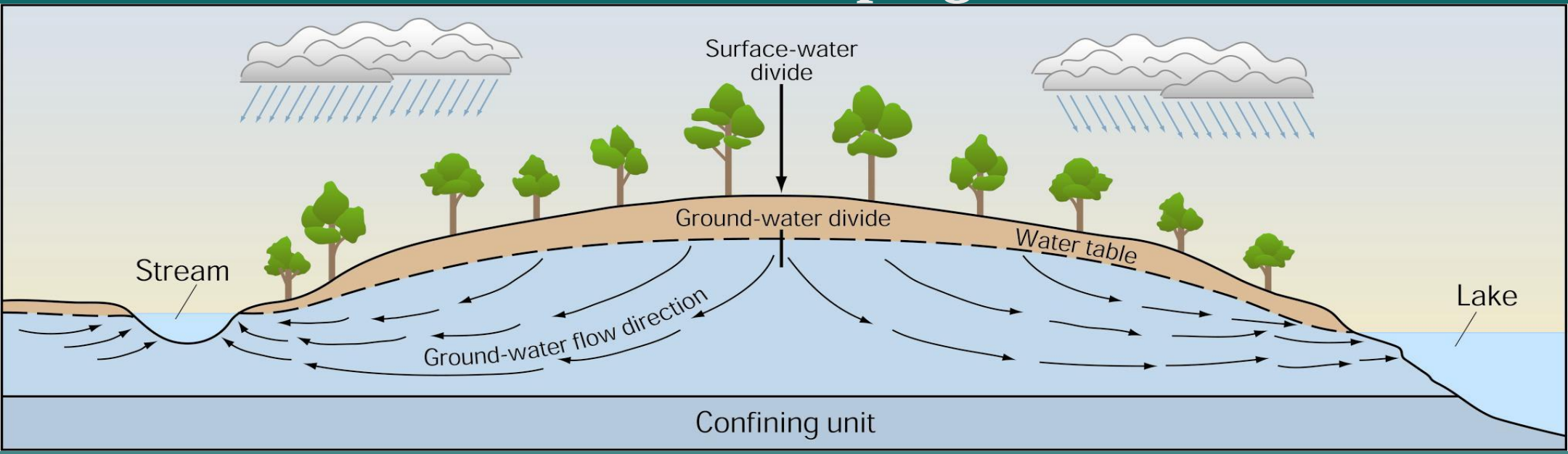
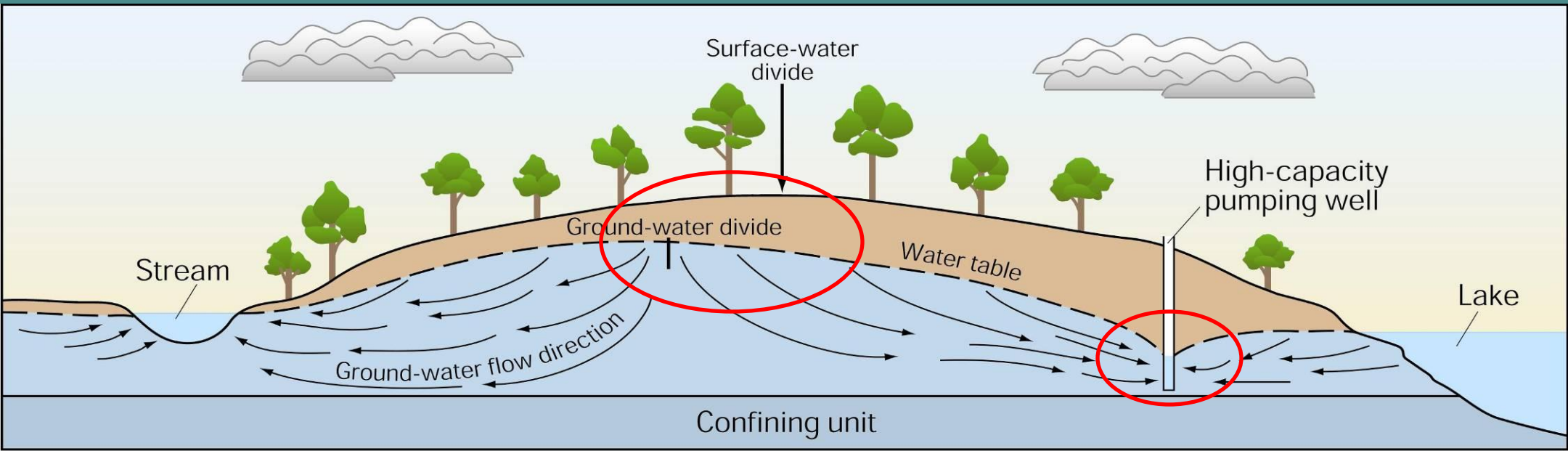
Lessons from the Central Sands

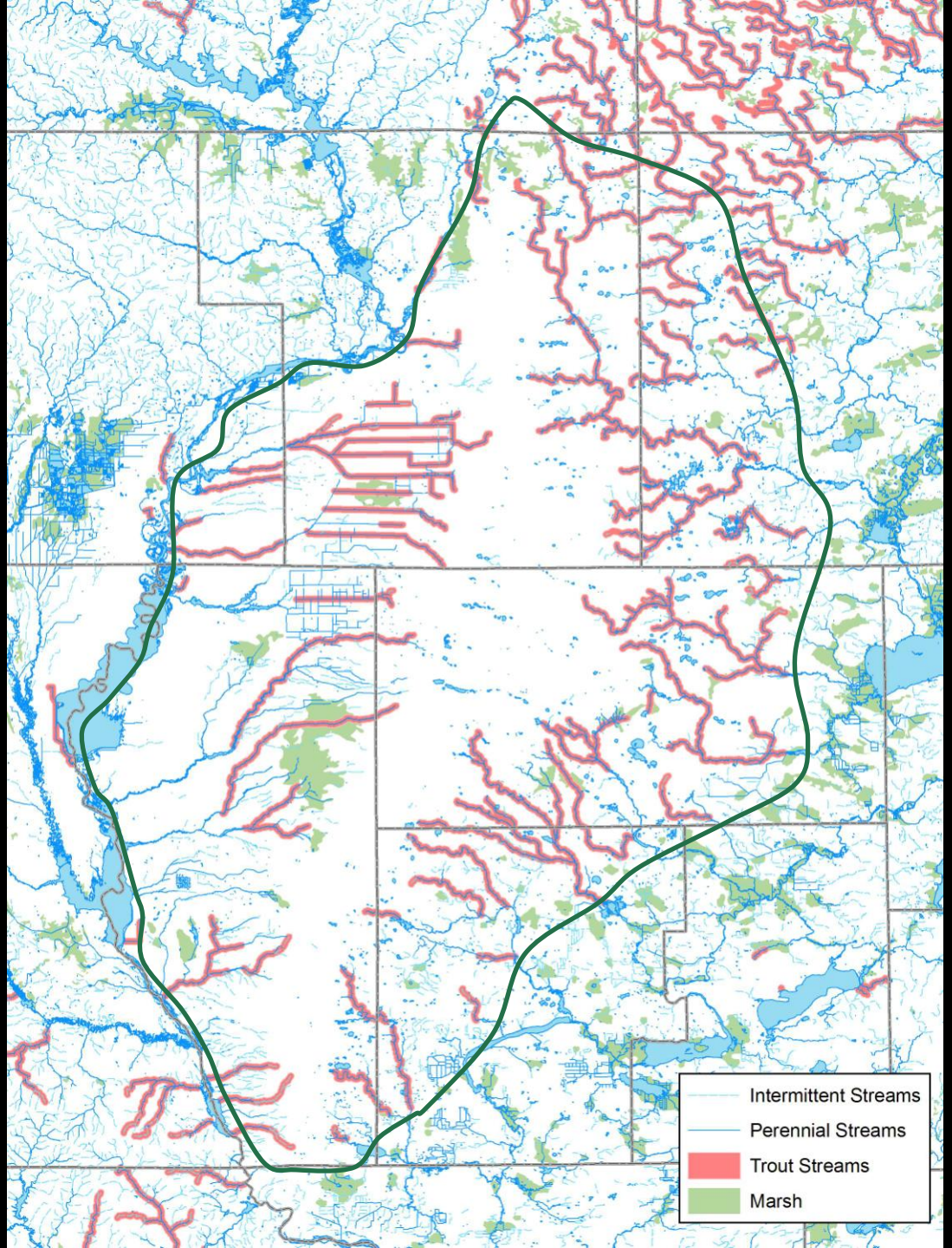
Lakes, Streams, and Groundwater Pumping

No Pumping



Affected By Pumping




Intermittent Streams
Perennial Streams
Trout Streams
Marsh

1949 – "What we need is to regulate withdrawal of water and put on the books legal recognition of irrigation, establishing what the [pumper] can use, how much, and when."

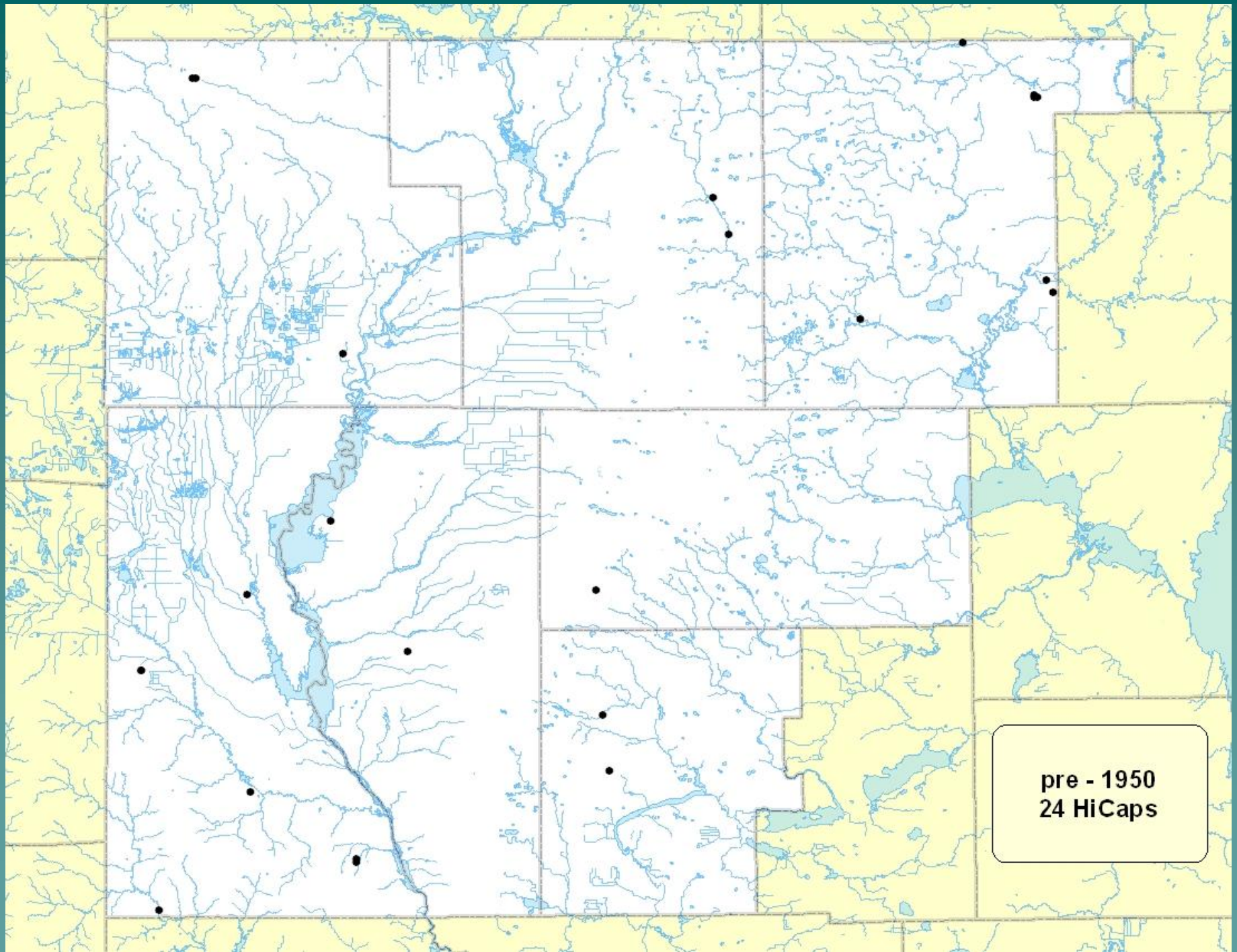
- O.I. Birge Wisconsin College of Agriculture

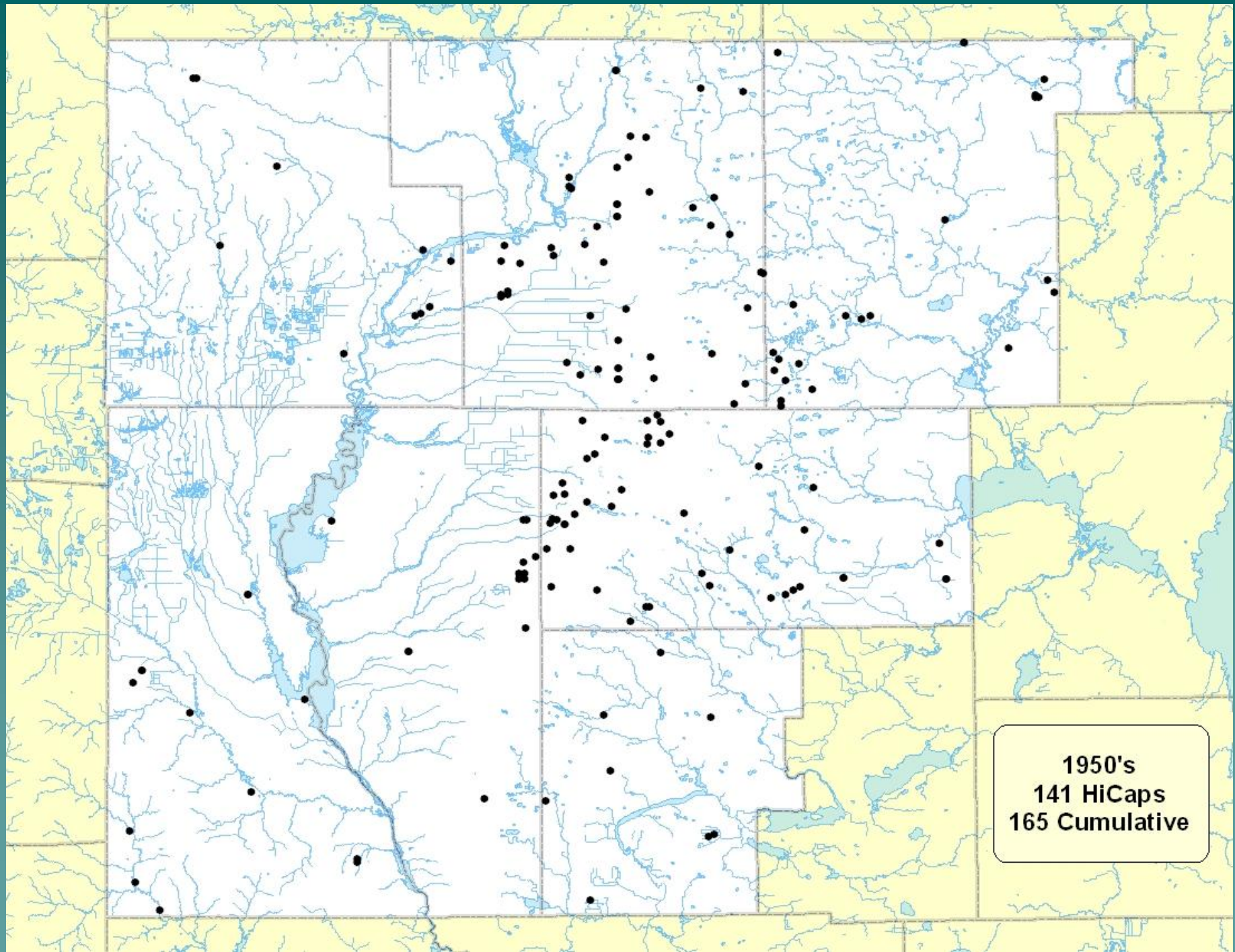
1959 – "Irrigated land in Wisconsin has doubled every five years since 1939. In 1956 there were an estimated thirty thousand acres being irrigated ... No reasonable person is concerned about this...."

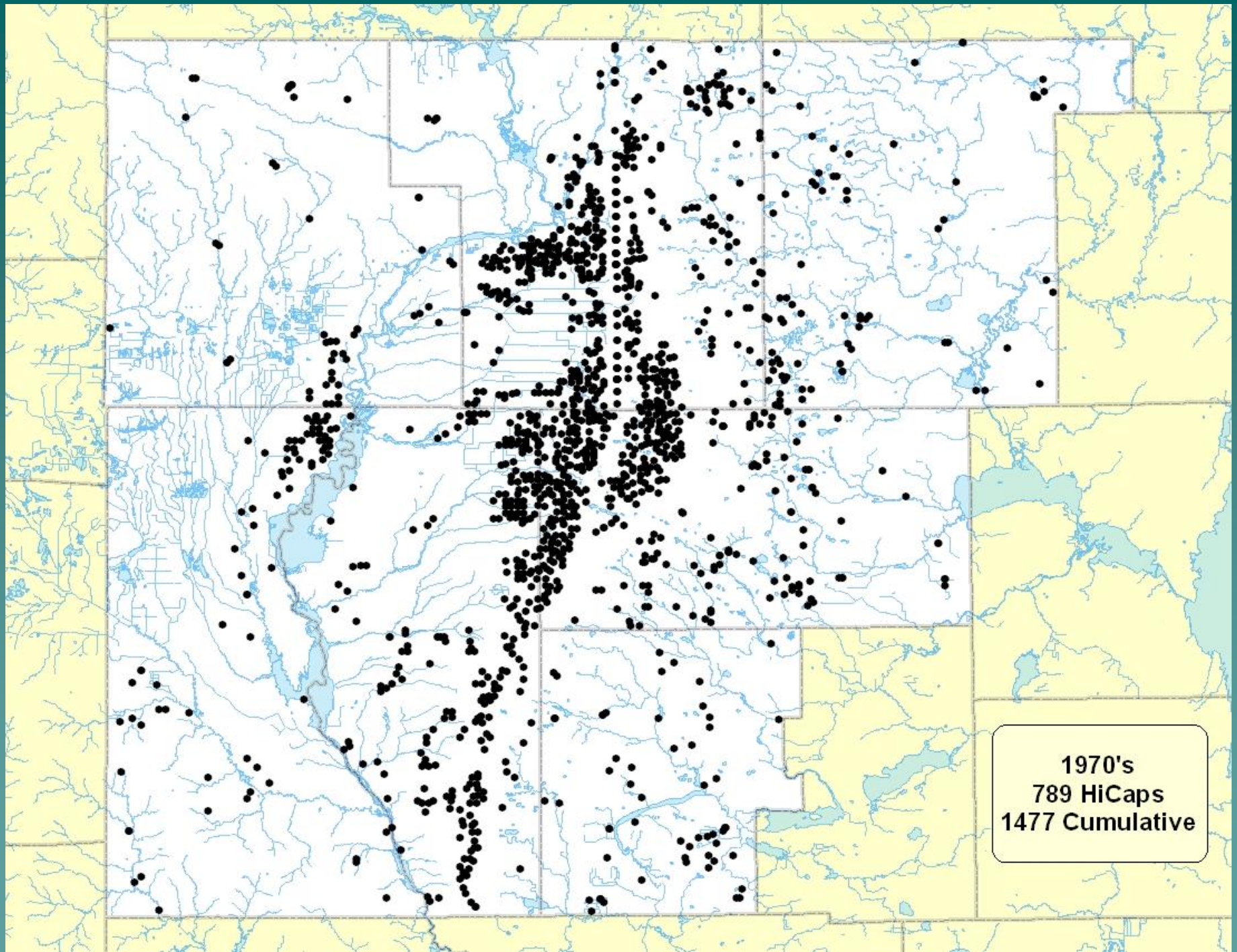
- Wisconsin Agricultural Water Conservation Committee

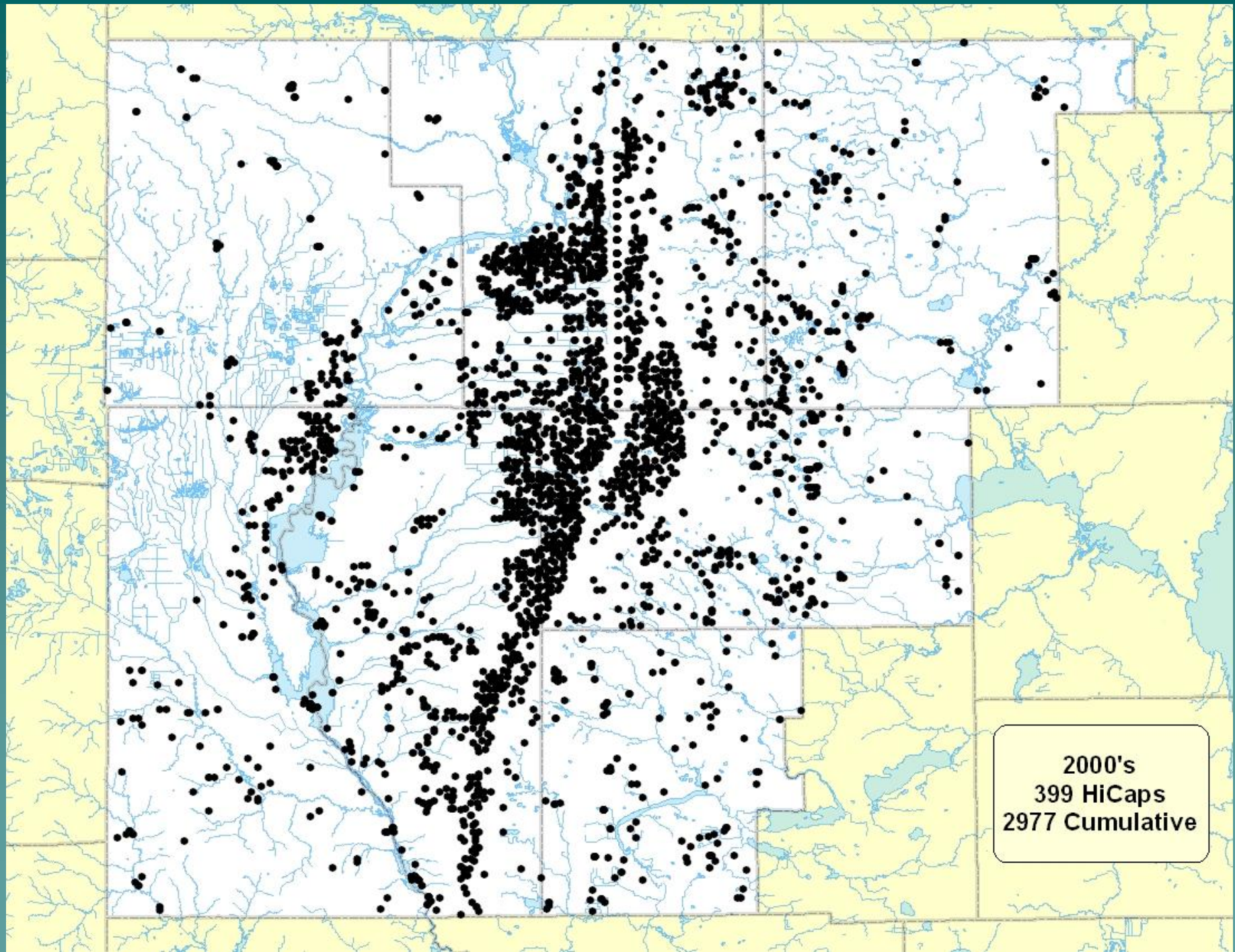
1957 –"There is just too much water there for the small amount of ground water used to have a serious effect."

- George Hanson, WI State Geologist.


pre - 1950
24 HiCaps

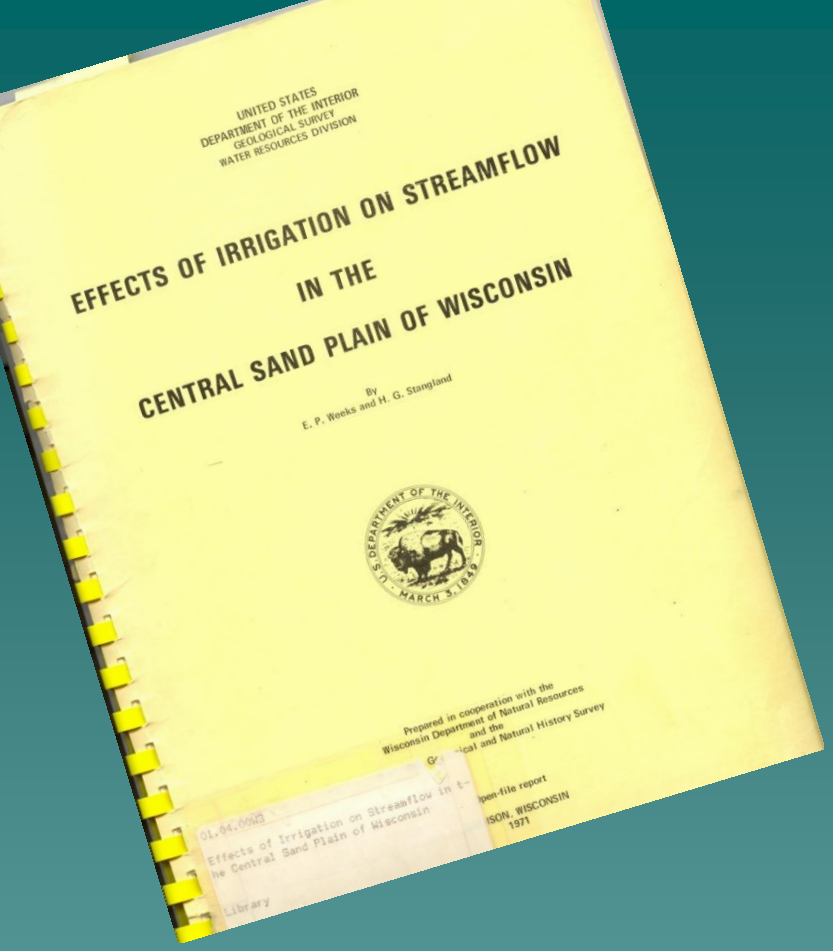

1950's
141 HiCaps
165 Cumulative


1970's
789 HiCaps
1477 Cumulative


2000's
399 HiCaps
2977 Cumulative

Lessons

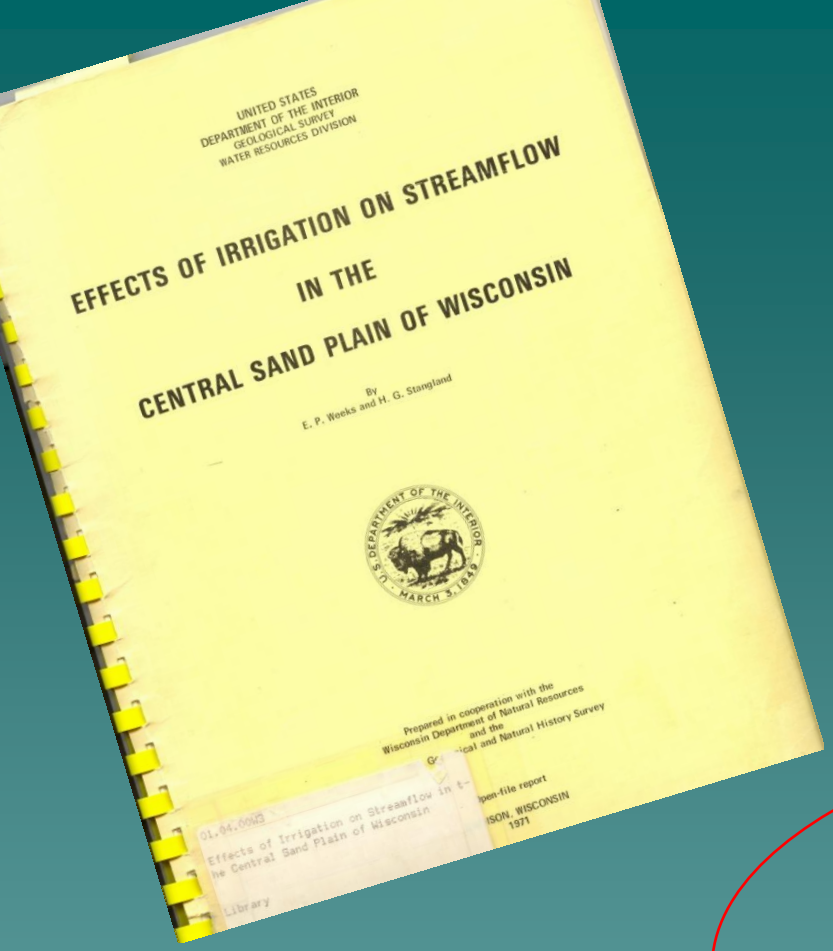
- Monitor impacts and outcomes of resource use policy



Effects of Irrigation (on top of weather)

1970 – 25% of the area irrigated

- normal summer stream loss: 25-30%
- normal summer water decline: ½ foot
- drought stream loss: 70-90%
- drought water decline: 2-3 feet



Effects of Irrigation (on top of weather)

<u>50% area irrigated</u>

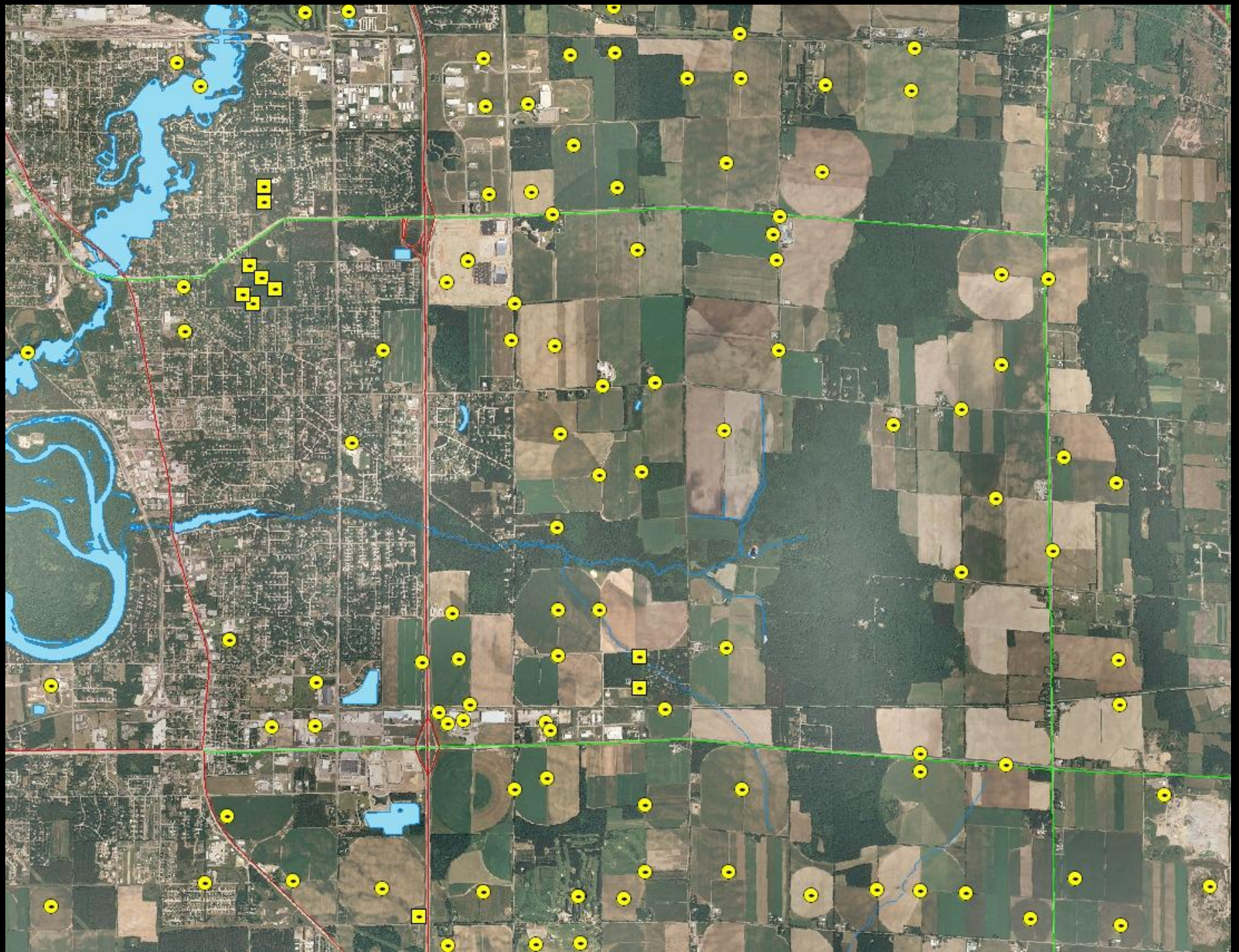
-drought stream loss: 100%

- drought water decline: 4 – 5 ft

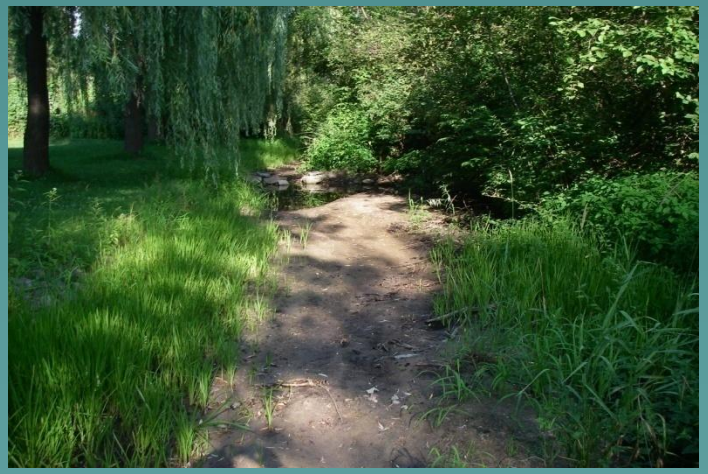
Lessons

- Monitor impacts and outcomes
- Systems needed to incorporate new knowledge in resource management

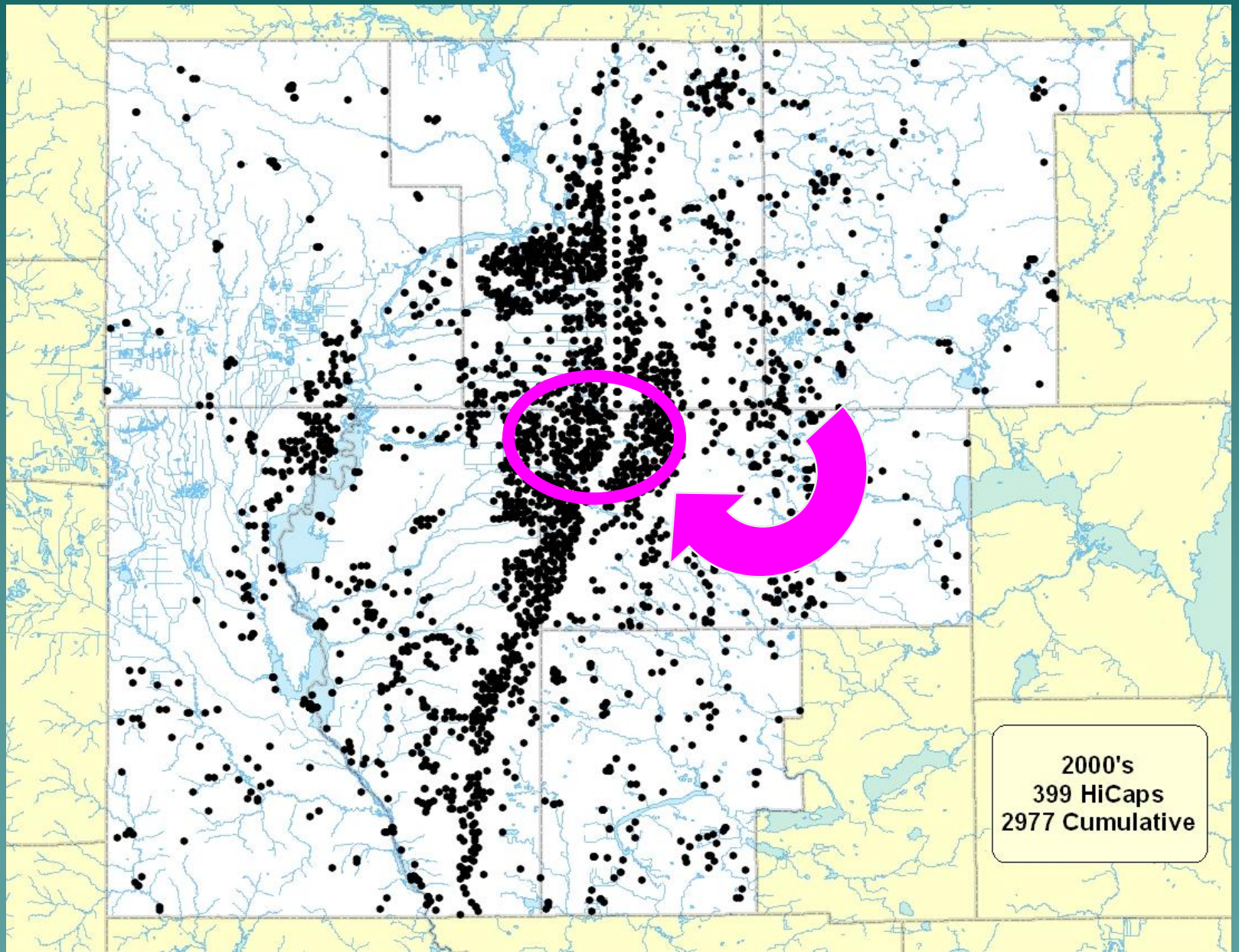
Little Plover River – 1980s



Little Plover – (Dry stretches 2005-2009)



Long Lake, Waushara Co.



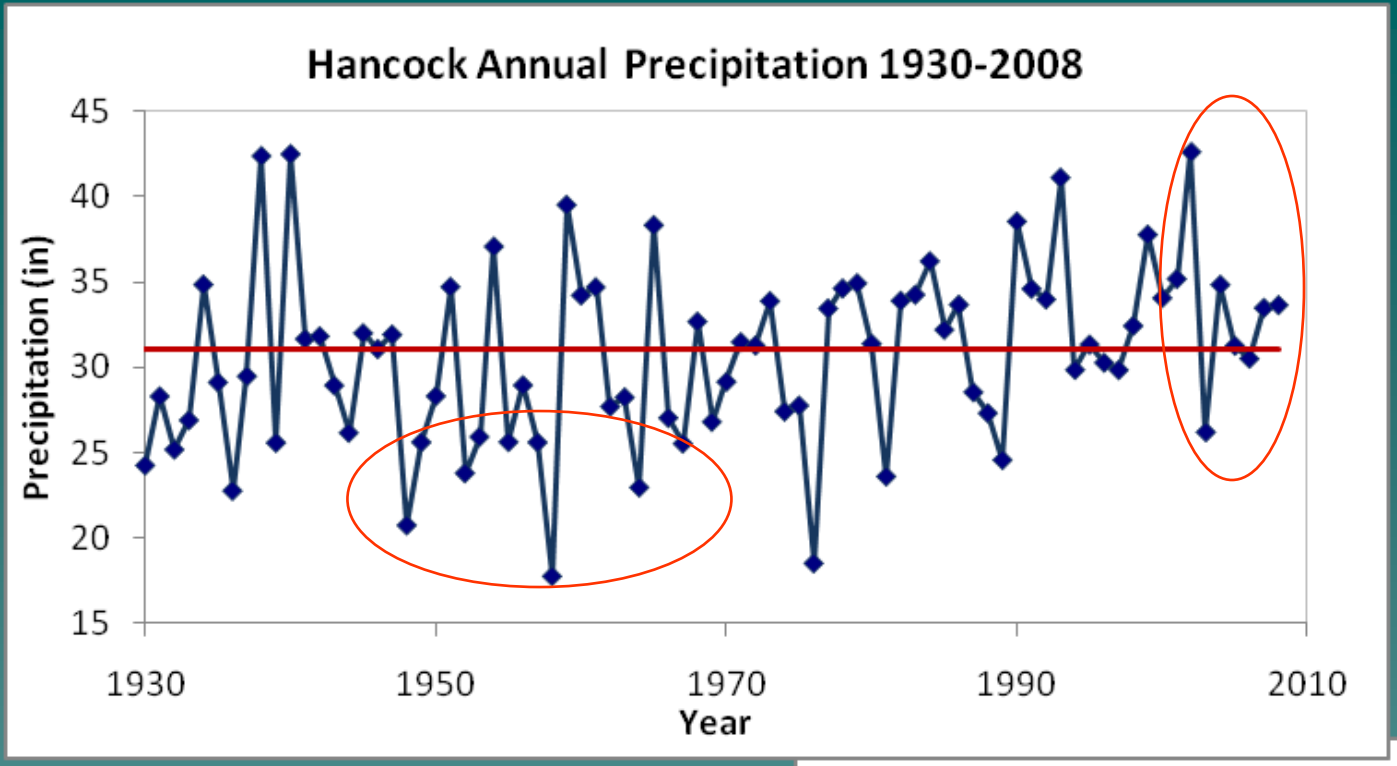
1950s

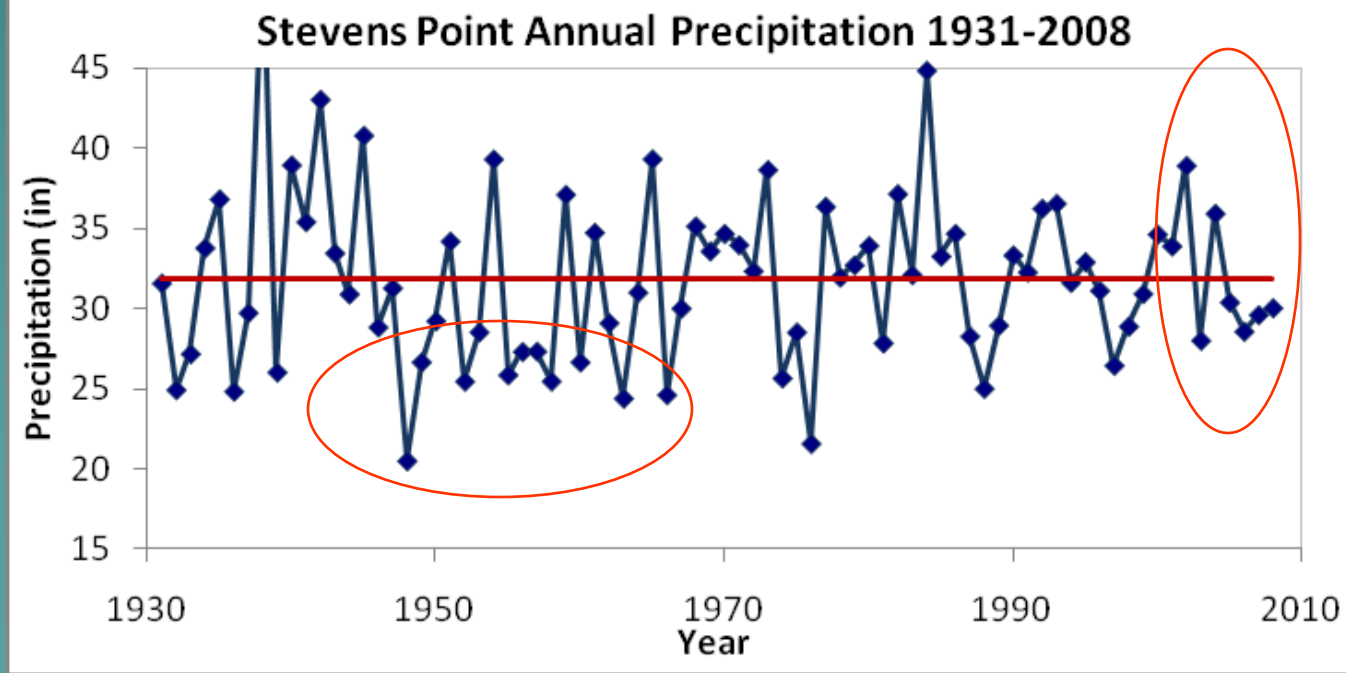
1994

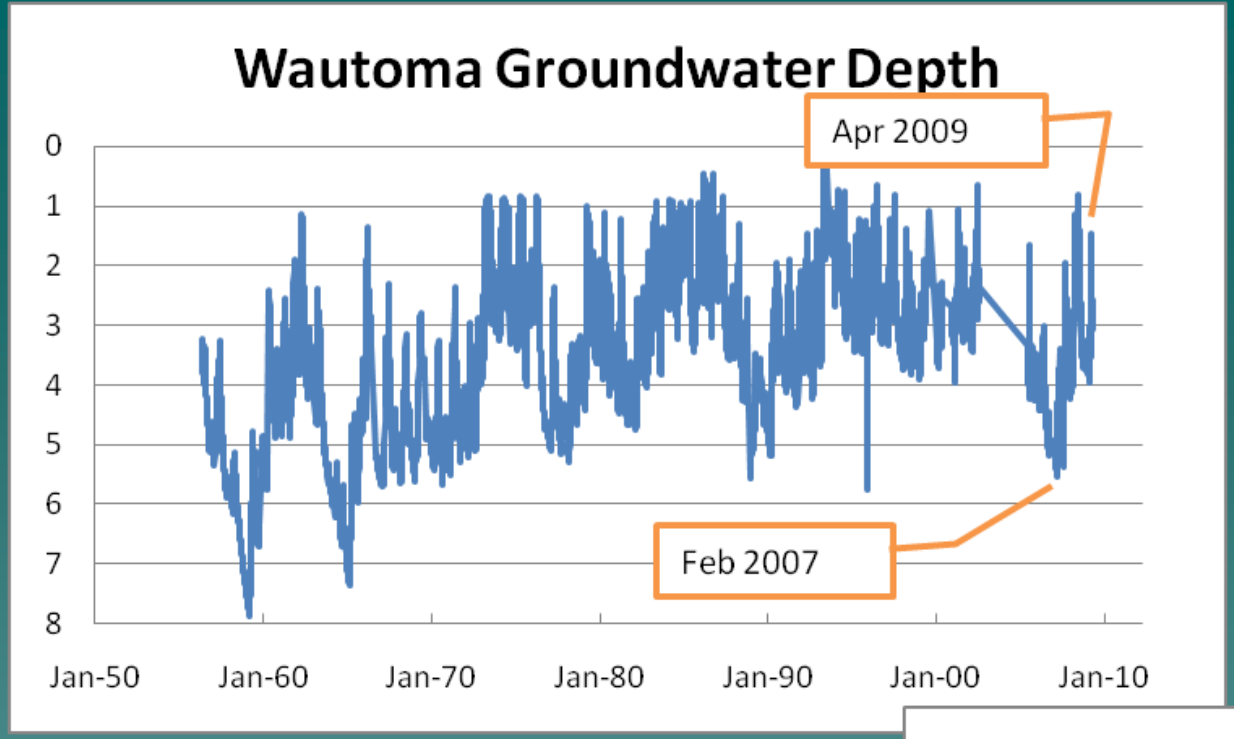
Spring 2006

July 2006

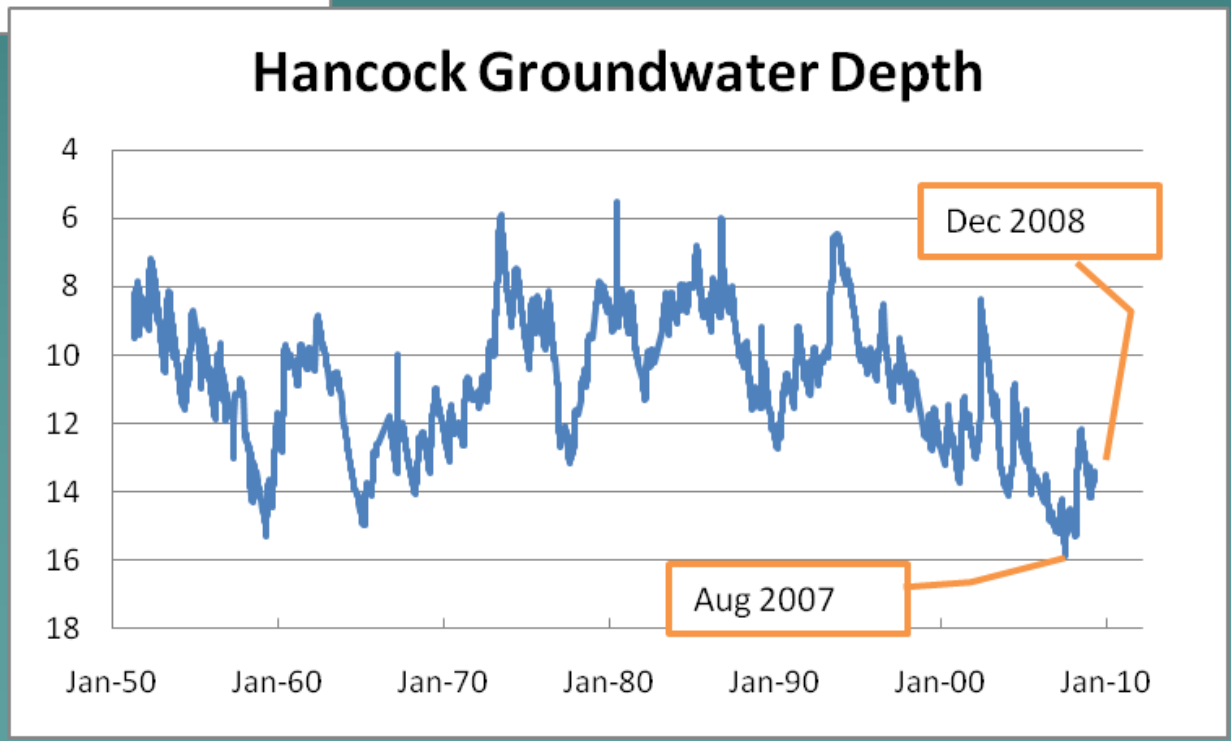
Precipitation





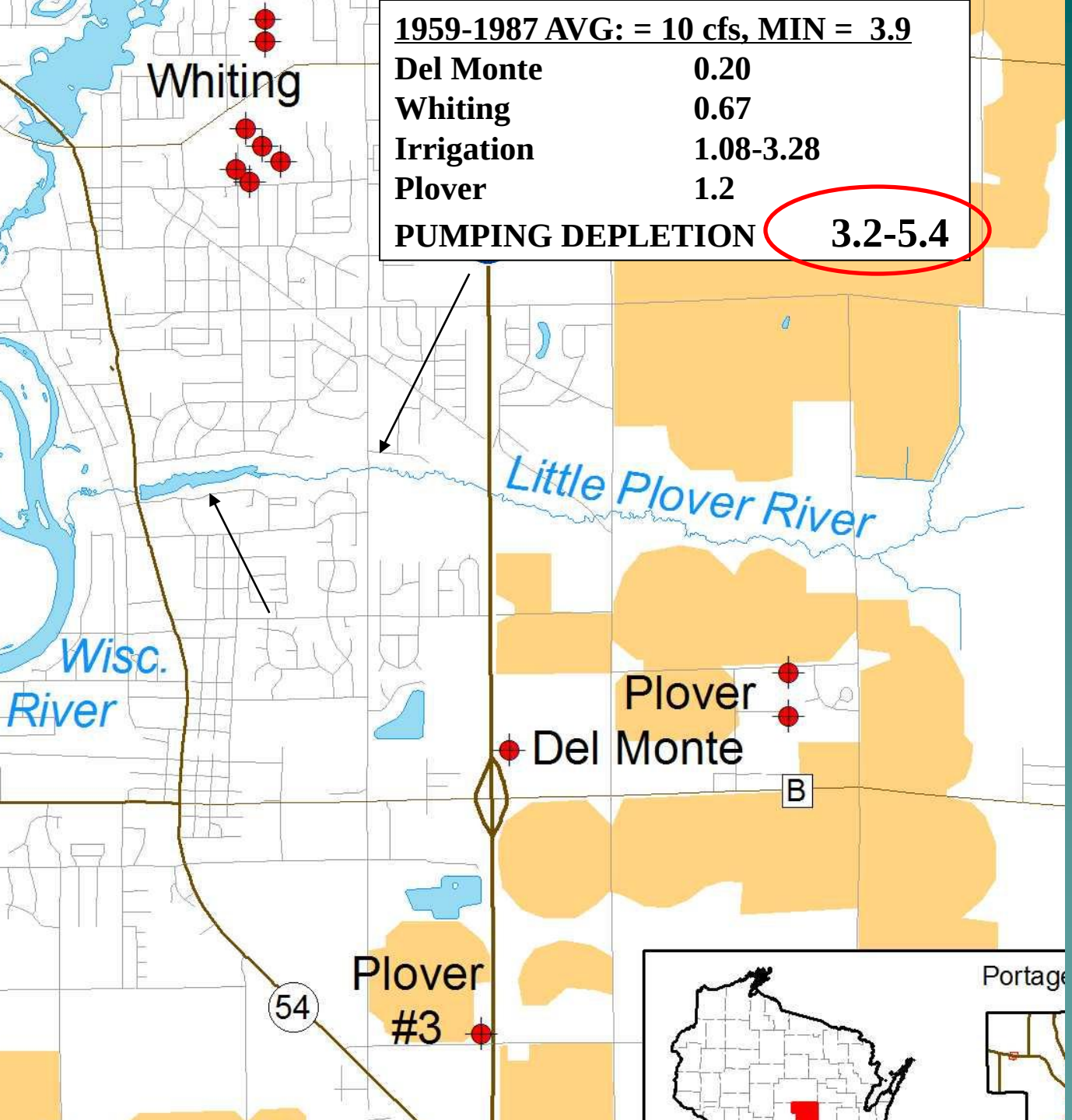


Little pumping



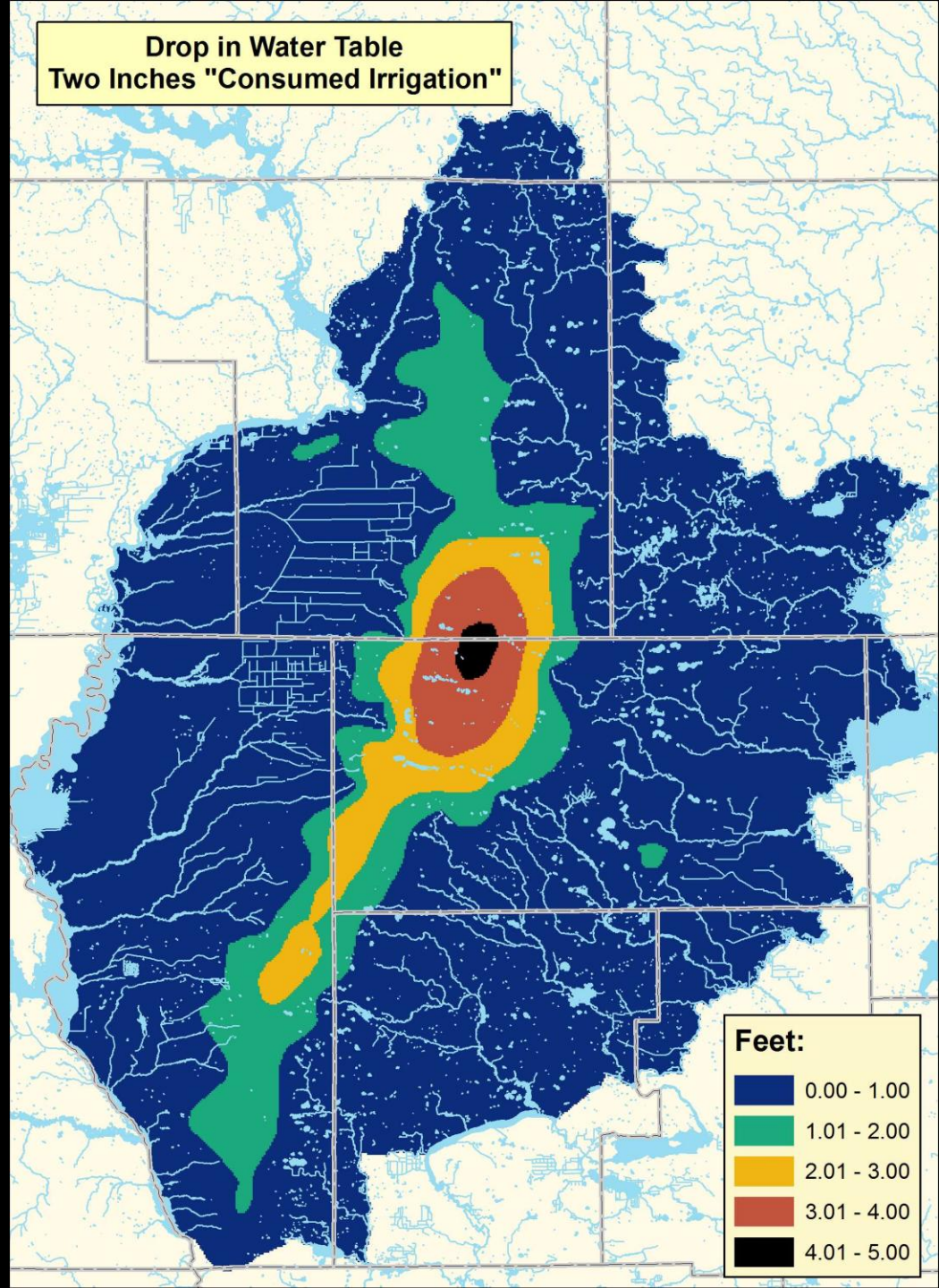
Lots of pumping

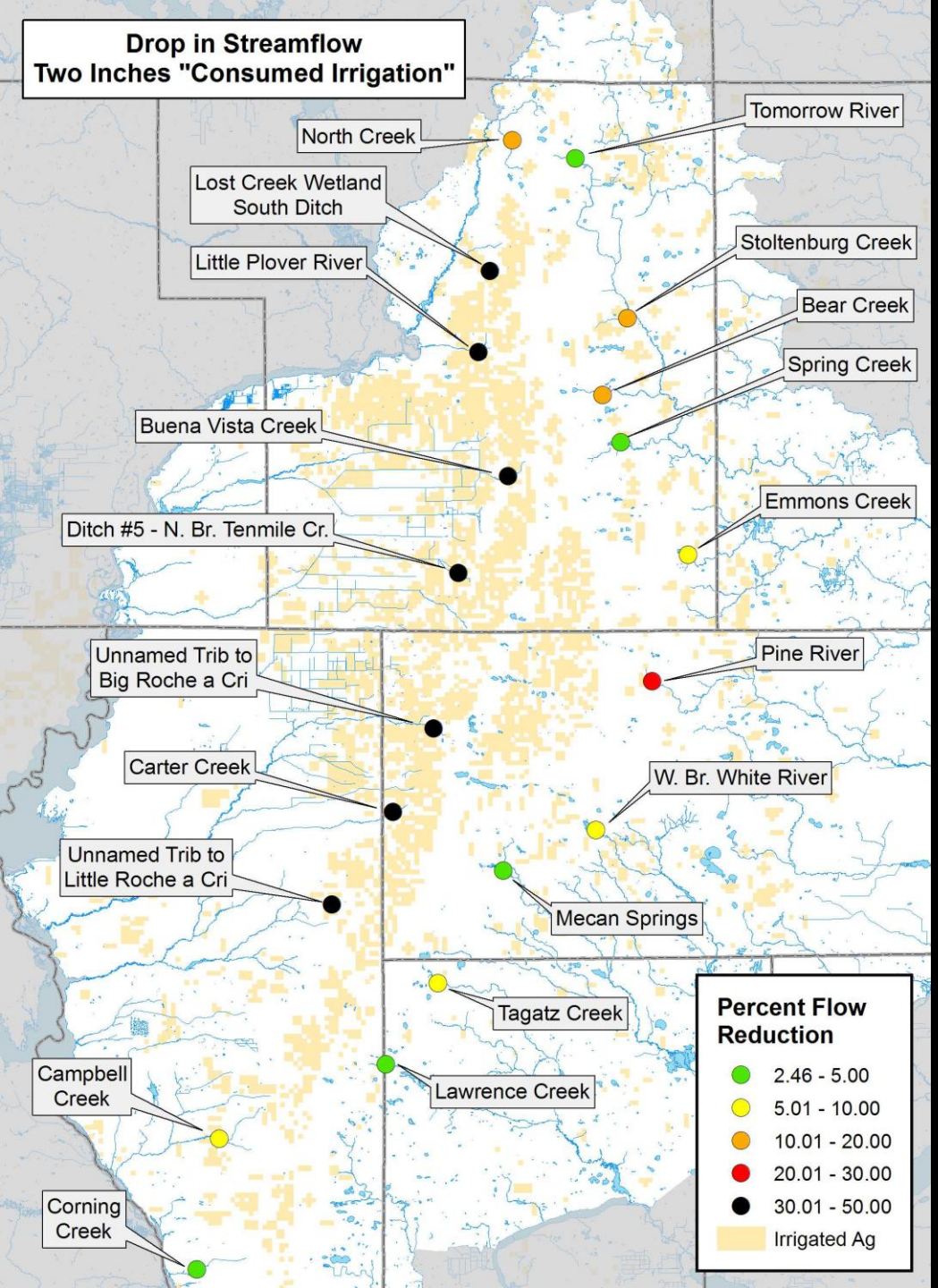
Pumping Impacts – Little Plover



Average Water Level Decline from Pumping

(2 inches “consumed” irrigation)





% Less Headwater Stream flow from Pumping

(2 inches “consumed” irrigation)

Lessons

- Monitor impacts and outcomes
- Incorporate new knowledge in resource management
- Resource needs to be managed to avoid and/or repair resource damage

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- O.I. Birge Wisconsin College of Agriculture

Gaps in the Current Law ?

- no explicit protection for 99% of lakes, 92% of streams; wetlands, 99+% springs
- protected waters still can be pumping impacted (1201 ft political, not scientific)
- existing wells virtually uncontrolled

Some Gap Fillers?

- Protect all water bodies some to some degree.
- Manage ALL pumping, not well by well
- Adaptive management: Monitor resource, monitor resource use to avoid damage
- Wells are just a structure, focus on the water that comes out of them.